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A STUDY ON EMPLOYABILITY SKILLS OF ENGINEERING STUDENTS AND EMPLOYERS EXPECTATIONS

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ABSTRACT

The study on the selection of employability skills among engineering students. In this paper for the selection of employability skills are mentioned those are fundamental skills, technical skills, interpersonal skills and critical skills these are to be assess among the engineering student for the employment opportunities. The gap between the skills expected by the industry and actual skills possessed by the candidates are to be examined. It should be properly done and get the job. So engineering students will get employability skills, it to be used for get a good job. The research design used for this study is descriptive in nature. Sampling technique adopted for the study is convenient sampling, non-probability sampling. Data collection is made with both primary and secondary data in this study. The primary data were collected through questionnaire by means of mailing and directly collect the questionnaires with the employer and engineering students. The source of secondary data was journals, thesis and research papers. The tool used for analyzing and interpreting the employability skill level of engineering students and employers expectation from engineering students is factor analysis and chi square test in SPSS. The result were explained in the tabular form.

KEY WORDS: *Employability Skills, Final Year Engineering Students, Employer's Expectation, Employment.*

I. INTRODUCTION

Education is the process of knowledge, skills, values, beliefs, and habits. It is really a means to discover new things which we don't know about and increase our knowledge. In India's higher education system is third largest in the world. The first two places are United States and china. In India engineering and technology degree holders are 2,588,405 in census 2001. In India as 80 percent of the engineering graduates are unemployable.

According to ABET (Accreditation Board for Engineering and Technology) Engineering is the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize economically the materials and forces of nature for the benefit of mankind.

Unemployment Rate in India is 10.0 percent it will be taken at September 2016. Unemployment rate in Tamil Nadu urban-36, rural-45. In 5lakh engineers only 17.45% are employable for the IT

service sectors and 2.68% IT product companies (2011). In mechanical engineering unemployment rate is 6.3%, Civil engineering 12.8%, naval architecture 2.9%, computer engineering 6.7%, electrical engineering 3.7% engineers are not have job.

Therefore the engineering students are must have certain skills to gain a job. The skills are generic skills and lately known as employability skills. Employability has been defined as "the capability for gaining and maintaining employment". Skill is the ability to carry out a task with pre-determined results often within a given amount of time and energy.

Australian Chamber of Commerce "Employability skills are those which support your ability to perform in the workplace, also known as transferable skills learned in one context which can be applied and further developed in other contexts and roles non-technical skills, also known as "soft skills" there is broad consensus about the attributes that employers expect to find in graduate recruits"

The students and graduates are highly motivated, have up-to-date skills and knowledge that can benefit for future. The employability was measured across three domains: IT roles (software engineer, IT product services, ITEs operations), engineering roles (Design engineering, sales engineer) and non-technical roles (business analyst, associate, creative content developer, technical content developer).

Students are not aware in the applications of theories in industry. The students are search the set of skills required by employers, that process is being looked in to only during the final year. It will start in first year they will surely get the job in final year. The employability skill is most important in student's life for get job.

Employability skill is most important to get a job. The gap between the skills expected by the industry and actual skills possessed by the candidates. The most of engineering students are placed in IT, BPO, manufacturing industries, government, etc. This study is a descriptive study the data collection is primary data. The respondents are engineering students and employers.

II. STATEMENT OF THE PROBLEM

Most of the engineering students are not having a job, the major problems are insufficient understanding of basic concepts, not well-versed in their core subjects, lack of exposure, presenting themselves in not clear manner, low level of self-confidence, lack of communication skill, etc. Students are search the set of skills required by employers, that process is being looked in to only during the final year. So this study helps to improve their employability skills and helps them to improve and get employability for the company.

III. LITERATURE REVIEW

(AZAMI ZAHARIM) Studied the comparison of the differences and similarity of employability skills among engineering graduates in different countries. Nowadays employers give importance to employability skills. This is a significant of increasing unemployment. The result indicates these countries have necessary employability skills frameworks to prepare engineering graduates for employment. This paper suggests the engineering graduates must acquire a set of generic skills.

(SOKKALINGAM, 2014) Studied the M.B.A students' ideas on the employability skills. It considered the M.B.A students' personal features related to the factors of employability skills. The findings indicate the outcome of six factors were statistically significant.

(ROZARIO, 2016) Studied the different levels of employability skills in rural colleges. The results of the study may be useful to the government and skill development agencies to design an activity to improve the level of employability skills of the rural MBA students.

(CHUNG-KHAIN WYE, 2009) Investigated whether the undergraduates' core competencies are able to meet with needs set by employers and analyses the effectiveness of person qualities and development in private university. The result shows the undergraduates are all highly competent in possessing personal qualities and skills.

(GOWSALYA**.G,** 2016**)** Studied the relationship between employability skills and parents qualification. It gives the idea for the appropriation of the employability skill among engineering students. In employability skills the parents can set out the key choice of students face their employment and developing the employability skills will need for success.

(Maribet. buenviaje, 2016) Studied the most employer faced in selection process of employees. The leadership skills and management skills are very important aspect of student outcomes. The MBA graduates are expected to possess good leadership qualities and usually a good decision maker.

(Mohd Yusof Husain, 2010) Studied to survey the importance of employability skills of engineering graduates done employers' perspective. The result showed that employer rated the importance to a high level of employability skills.

(Mohd shanmsuri Md Saad, 2013) Studied to explore the employability skills that students need to possess, as well as the employers' perceptions. The results shows that problem-solving, tool handling

expert evidence and presentation skills features are highly demanded of students by employers.

(TD) Studied to concentrates on their final year engineering students' perception to gain industrial placement and increase the value in employability on graduation. The result shows a strong linkage between unique period of employability and placement.

(Mishra, 2016) Studied the value of employers as well as employee towards employability skills necessary for the entry level engineering graduates in companies. The result suggest the engineering graduate should acquire a set of generic skills that is good communication, personal skills, presentation skills, Technical Knowledge, Leadership skills, self-assessment and goal setting.

(Rao, 2016) Studied the basic structured employability skill behavior and to understand the effect of employability skills. The result shows that there is an enough scope for enhancement in skills among commerce students.

(Gurvinder kaur gurcharan singh, 2008) Studied to identify the perception of employers concerning the employability skills wanted in job market and graduates' perception of their currently possessed employability skills. The result shows that younger employers tend to be favorable to graduates' employability skills.

(G.Gowsalya, 2015) Studied the employability skills such as self-understanding, general management and work culture, leadership and problem solving ability and communication. The result shows the candidate who is having a multi-tasking skill to gain employment.

(Umme-Amen, 2014) Studied the gap between the performance of new graduates and employers' expectations through knowledge, skills and abilities (KSA) in service sectors. The result shows that the gap does exist between the employer expectations and performance of new graduates.

IV. EMPLOYABILITY SKILL

Peter Knight & Mantz Yorke (HEFCE/DfES ESECT group) "A set of achievements, understandings and personal attributes that make individuals more likely to gain employment and to be successful in their chosen occupations".

Employability skills are "those basic skills necessary for getting, keeping, and doing well on a job" – Robinson. "Getting a job is not just about having the 'right' qualification it's about your attitude, behavior, skills and abilities. These are known as employability skills.

Employability skills are generally divided into four skills sets fundamental skills, critical thinking skills, interpersonal skills, and technical skills.

Engineering Employability Skills

It can be defined as: "Ability to perform engineering related skills, knowledge and personal attributes to gain employment, maintain employment and succeed in the engineering field". Most useful skills for employability skills for engineering students is English communication skill, written communication, team player, good problem solving skill, commercial awareness, self-motivation, flexibility, time management.

V. INTEGRATION OF EMPLOYABILITY SKILLS

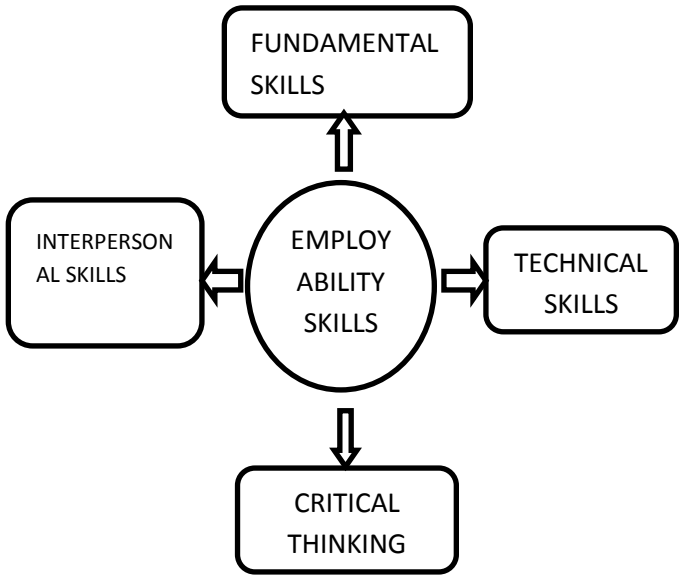


Fig.1 variables of employability skills

Fundamental skills

The ability needed to perform task. The basic ability necessary to function adequately in society. Skills are reading, writing, mathematics and communication.

Technical skills

The knowledge and capabilities to perform specialized tasks related to technology. It also refers to the ability of a certain type of stock trader who uses technical analysis to buy and sell stocks.

Critical Thinking skills

"The process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information to reach a conclusion"

Interpersonal skills

The set of abilities enabling a person to interact positively and work effectively with others. In the business domain, the term refers to an employee's ability to get along with others while getting the job done.

VI. EMPLOYERS EXPECTATION

Some of the skills employers are looking for,

Written Communication – Able to express yourself clearly in writing.

Verbal Communication – Able to express your ideas clearly and confidently in speech.

Flexibility – Adapt successfully to changing situations and environments.

Commercial Awareness – General knowledge of business, business experiences or work experience, and, specifically, an understanding of the sector.

Teamwork - Work confidesntly within a group.

Planning and Organising – Able to plan activities and carry them through effectively.

Investigating, Analysing – Gather information systematically to establish facts and principles.

Drive – Determination to get things done. Constantly look for better ways of doing things.

Initiative / Self- management – Able to act on imitative, identify opportunities and proactive in putting forward ideas and solutions.

Time Management – Manage time effectively, prioritising tasks and able to work to deadlines.

Numeracy – Able to carry out arithmetic operations/understand data.

Self- Awareness – Awareness of achievements, abilities and areas of development.

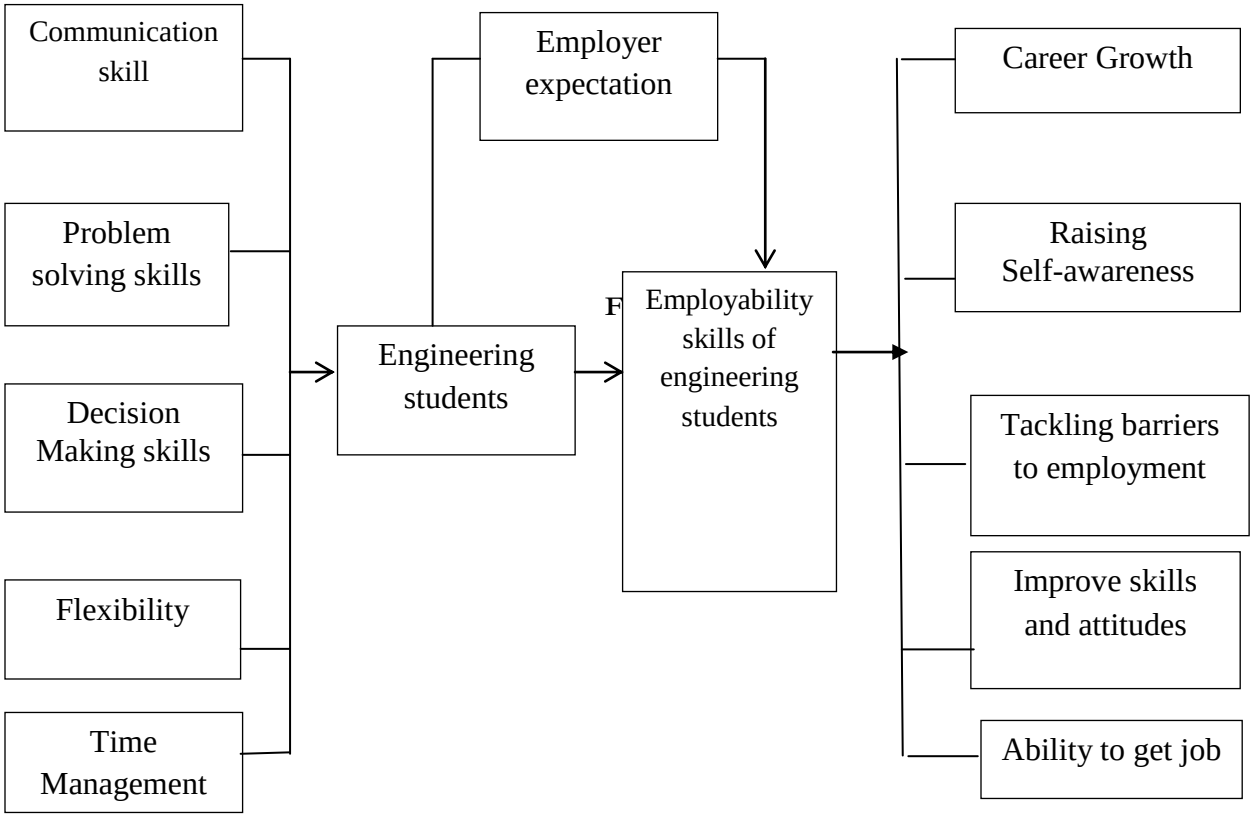
Professionalism – Pays care and attention to quality of their work.

Table.1. Employability Skills

Fundamental skills	Critical Thinking skills	Personal skills	Technical skills
Reading Writing Science Math Oral communication Listening	Learning Reasoning Thinking creatively Decision making Problem solving Planning	Responsible Self-confidence Self-control Social skills Honest Integrity Adaptable & flexible Team spirit Punctuality Good work attitude Self-motivated Self-management Leadership Hard working	Exchanging e-mail Microsoft word(using) Microsoft excel(using) Basic computer science skills Subject knowledge

VII. FRAMEWORK OF THE STUDY

The main objective of this paper is this to find the gap between the employee's expectations with the candidate



2. Framework of gap between the skills expected by the industry and actual skills possessed by the candidates

RESEARCH OBJECTIVES

- To explore the factors contributing employability skills
- To analyze the level of employability skills of engineering students and employer expectation.
- To assess the relationship of engineering students and employer expectation.
- To suggests to get the good job for engineering students to overcome the unemployment rate.

RESEARCH METHODOLOGY

Research methods or a technique refers to the researchers use in performing research operations. It can be those methods concerned with the data collection and analysis.

Research methodology is a way to systematically solve the research problem.

RESEARCH DESIGN

"The formidable problem that follows the task of designing the research problem is the preparation of design of the research project is known as research design." (KOTHARI)

- The study is undergone with research design of descriptive analysis.
- The questionnaire was made with scaling technique – five point scales.
- The analysis is made with the tool factor analysis and chi square test in SPSS.

SAMPLING TECHNIQUE

The study is made with non- probability sampling in which convenient sampling technique is taken.

The sample size taken for the study is 200 engineering students and 21 employers.

HYPOTHESIS STATEMENT

- Course has associated with domain knowledge.
- Gender has associated with problem solving.

- Gender has associated with initiative nature.
- Age has associated with oral communication.
- Experience has associated with oral communication
- Gender has associated with problem solving skill

DATA ANALYSIS AND INTERPRETATION

FACTOR ANALYSIS

For students

The study undergone with data analysis using tool factor analysis which is used to reduce the factor dimension where variables are grouped and compressed for which rotated component matrix is given below and chi square test is used with the grouped variables to find out the associated between those variables for which the cross tabulation is mentioned below.

Rotated Component Matrix[a]

	Component			
	1	2	3	4
GK	.755	.204	.173	.038
logical	.735	.145	.195	.000
listening	.658	.115	.083	.088
grammar	.645	.275	.005	-.229
quantitative	.614	.236	.197	.050
domain	.604	.195	.317	-.007
problemsolving	.483	.134	.448	-.099
planning	.477	.461	-.091	-.143
initiation	.226	.690	.157	-.146
manage	.151	.683	.146	.115
oral	.085	.657	.367	-.070
written	.289	.598	.181	-.088
adoptability	.325	.584	.026	.268
data	.238	.129	.755	.089
searching	.043	.386	.638	-.040
enthusiasm	.527	.082	.596	.026
extracurricular	.097	.230	.140	.819
attempts	.107	.240	.103	-.523

The factor analysis is used to reduce the dimensions. The above analysis is made with 28 variables which is compressed as 4 factors namely " **Fundamental skills, Inter personal skills, Technical skills, General skills.**

For employers expectations

Rotated Component Matrix[a]

	Component							
	1	2	3	4	5	6	7	8
flexible	.839	.113	.222	.068	.167	-.027	.086	.002
puntual	.794	-.310	.160	.168	.140	-.110	.003	.084
news	.723	.209	.075	-.223	-.191	.371	.195	.070
presentation	.683	.129	.430	-.145	.239	.345	-.091	-.064
domain	.600	.114	-.463	-.019	.294	.044	.406	.130
manage	.594	.386	.130	-.065	.351	-.355	-.013	.292
initiative	-.164	.844	.026	-.021	.257	.114	-.225	-.070
discipline	.268	.732	.220	-.063	-.140	.357	.091	.000
technology	.333	.640	.290	.421	-.141	.015	.086	-.008
problem	.017	.587	.176	.265	.350	.034	.445	.341
confident	.129	.538	.290	.284	.314	.387	.004	-.329
dedication	.430	.447	.291	-.220	.317	.387	-.321	.228
inter	.249	.080	.814	-.091	.075	.114	.118	.070
leadership	.220	.067	.778	.151	.162	.312	-.013	-.038
motivation	.177	.453	.776	-.145	-.087	.090	-.083	-.004
coordination	-.005	.468	.517	.196	.162	-.104	.492	-.021
positive	-.104	.446	.501	.116	-.245	.388	.038	.237
grasping	.006	.210	-.023	.899	.133	-.097	-.095	.094
oral	-.007	-.185	.031	.820	.107	.278	.379	.116
written	-.120	.105	-.259	.563	.251	-.081	.503	.277
code	.341	.001	.120	.209	.733	-.022	.205	.021
decisionmaking	-.008	.328	.207	.406	.649	.315	.173	-.056
conflict	.326	.005	-.278	-.005	.638	.011	.137	.459
social	-.008	.192	.192	.294	-.086	.792	-.128	.070
stress	.090	.164	.219	-.271	.298	.706	.115	.109
creativity	.199	-.109	.060	.067	.140	.007	.897	.073
background	.119	-.038	.077	.214	.074	.136	.109	.899

Extraction Method: Principal Component Analysis.

The above analysis is made with 30 variables which is compressed as 8 factors namely "**Inter personal skills, Fundamental skills, General skills, Technical skills, Critical thinking skills, Innovation, Knowledge, Social responsibility.**

HYPOTHESIS FRAMEWORK

HYPOTHESIS 1

HO (Null Hypothesis): There is no significant association between course of the students and their domain knowledge.

H1(Alternative Hypothesis): There is significant association between course of the students and their domain knowledge.

course * domain Crosstabulation

Count

		domain					
		very low	low	medium	high	very high	Total
course	BE	3	24	51	38	23	139
	B.Tech	3	10	17	22	5	57
	Diploma	0	1	0	2	0	3
	11.00	0	0	0	1	0	1
Total		6	35	68	63	28	200

Calculated Value 10.639

H0 will be accepted. There is no association betweeen course of the students and their domain knowledge.

Tabulated Value 21.026

HYPOTHESIS 2

HO: There is no significant association between gender of the student and their problem solving skill

H1: There is significant association between gender of the students and their problem solving skill

Gender * problemsolving Crosstabulation

Count

		problemsolving					
		very low	low	medium	high	very high	Total
Gender	male	3	15	42	69	25	154
	Female	0	10	14	12	10	46
Total		3	25	56	81	35	200

Calculated Value 8.780

H0 is accepted. There is no association between gender of the students and their problem solving skills.

Tabulated Value 9.488

HYPOTHESIS 3

HO: There is no significant association between gender of the students and their initiative nature

H1: There is significant association between gender of the students and their initiative nature

Gender * initiation Crosstabulation

Count

		initiation					
		very low	low	medium	high	very high	Total
Gender	male	4	17	50	57	26	154
	Female	2	7	16	14	7	46
Total		6	24	66	71	33	200

Calculated value 1.426

Tabulated Value 9.488

H0 is accepted. There is no association between gender of the students and their inittiative nature.

HYPOTHESIS 4

HO: There is no significant association between age of the students and their oral communication.

H1: There is significant association between age of the students and their oral communication.

AGE * oral Crosstabulation

Count

		oral					
		very low	low	medium	high	very high	Total
AGE	below 22	3	21	46	59	27	156
	23-25	1	10	14	8	7	40
	26-28	0	2	0	0	0	2
	others	0	0	0	0	2	2
Total		4	33	60	67	36	200

Calculated Value 25.351

H0 is rejected. There is a significant association between age of the students and their oral ccommuniction.

HYPOTHESIS 5

HO: There is no significant association between experience of the employer and their expectation level in oral communication skill of the interviewee's

Tabulated Value 21.026

H1: There is significant association between experience of the employer and their expectation level in oral communication skill of their interviewee's

experience * oral Crosstabulation

Count

		oral				
		low	medium	high	very high	Total
experience	0-1 year	0	0	1	0	1
	2-3	1	6	6	0	13
	4-5	0	2	1	4	7
Total		1	8	8	4	21

Calculated Value 11.654

H0 is accepted. There is no significant association between experience of the employer and their expecttion level i9n oral communication skill of their interviewee's.

Tabulated Value 12.592

HYPOTHESIS 6

HO: There is no significant association between gender of the employer and their expectation level in problem solving skill of the interviewee's.

H1: There is significant association between gender of the employer and their expectation level in problem solving skill of the interviewee's.

gender * problem Crosstabulation

Count

		problem			
		medium	high	very high	Total
gender	male	5	6	2	13
	female	3	3	2	8
Total		8	9	4	21

Calculated Value 0.328 Tabulated Value 5.991

H0 is accepted. There is no significant association between gender of the employer and their expectation level in problem solving skill of the interviewee's.

HYPOTHESIS RESULT

HYPOTHESIS STATEMENT	RESULT
Association between course and domain knowledge	Negative
Association between gender and problem solving	Negative
Association between gender and initiative nature	Negative
Association between age and oral communication	Positive
Association between experience and oral communication level of the students	Negative
Association between gender and problem solving skill of the students	Negative

VIII. CONCLUSION & DISCUSSION:

The selection of employability skills in engineering students had be studied and the employers expectation to employment the candidates by the descriptive study. This helps to give an idea for engineering students about employability skills. This study helps to understand the concept of employability skills in students and employers expectations to recruit the candidates. The finding of this study is students level will be not associated with employers expectations. We will improve the employability skills and get a good job and develop extracurricular activities. This helps to get a good job for engineering students.

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